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BULLETIN
OF THE
MADRAS GOVERNMENT MUSEUM

EDITED BY THE
DIRECTOR OF MUSEUMS, MADRAS

Prof. T. Balakrishnan Nayar Endowment Lectures 1984

The Harappan and the Vedic Cultures: Musings on Some Moot Problems

by

K. R. SRINIVASAN, M. A.,
(Retd. Deputy Director-General, Archaeological Survey of India, New Delhi)

NEW SERIES—*General Section, Vol.* XV *No. 1*

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PREFACE

Prof. T. Balakrishnan Nayar, popularly known as Prof. T. B. Nayar, was a distinguished historian who had been for sometime Curator for Numismatics in this Museum and who continued to evince keen interest in numismatics, prehistory and archaeology. His book on "Dowaleswaram Hoard of Coins in the Government Museum, Madras" was published as a Bulletin of this Museum and is a much sought-after reference work. The Sir William Meyer Endowment lectures for the year 1956–57 which Prof. Nayar gave in the Madras University dealt with prehistory and made copious references to the material in the Government Museum, Madras. He kept up his association with the Museum long after the short period of Curatorship here. Meticulous as a scholar, he was also the soul of courtesy and kindness, qualities which endeared him to all those who came to know him.

It was in appreciation of his erudition and endearing qualities that a Memorial Committee was set up by his students and admirers to commemorate his contribution to historical scholarship in a fitting way. One suggestion which came from the Committee in 1982 was for the endowment of a memorial lecture in his name in the Government Museum, Madras with which he had been so closely associated. An amount of Rs. 6000/- was made available for this purpose for being suitably invested and the interest from this was to be utilised for endowing an annual lecture in one of the following subjects: archaeology, anthropology, numismatics and museology. A distinguished scholar in any one of these fields is to be invited to give a series of two lectures on any aspect of his specialisation. The Director of Museums of Tamil Nadu is to be the Administrator of the Endowment.

While the administrative processes for the Endowment were going on, it was felt that a beginning could be made by arranging for the first memorial lecture in January 1984. Thiru K. R. Srinivasan, retired Deputy Director-General, Archaeological Survey of India, was invited to give the first Prof. T. Balakrishnan Nayar Endowment Lecture. He accepted the invitation and gave lectures

on "The Harappan and the Védic Cultures – Musings on Some Moot Problems" on 28th and 29th, November, 1984. This series of lectures is being published now as a Bulletin of the Government Museum, Madras and made available for scholars. With his profound erudition, Thiru K. R. Srinivasan has made a wide-ranging survey of the topic he has selected, and these lectures form a fitting beginning for the Endowment. We extend to him our thanks for having accepted our invitation and for giving these lectures in this series.

The very idea for the Endowment was first mooted by Ms. Maitreyi Ramadurai, Convenor of the Memorial Committee who also helped in making it a reality. Her assistance in this regard is gratefully acknowledged. We would place on record the help received from Dr. (Mrs.) Mathangi Ramakrishnan, daughter of Prof. Nayar in quickly bringing to fruition the idea for the Endowment.

I am glad to place on record the keen interest evinced by Dr. V. N. Srinivasa Desikan, Curator, Archaeology Section in various matters connected with the Endowment.

Very few museums in India have the privilege of having endowment lectures instituted in them, and so this Prof. T. Balakrishnan Nayar Memorial Endowment in this Museum marks another of the pioneering activities on the part of the Government Museum, Madras which has always been in the vanguard of museological development in the country.

September, 1988
Madras-8

N. Harinarayana,
Director of Museums.

THE HARAPPAN AND THE VEDIC CULTURES - MUSINGS ON SOME MOOT PROBLEMS.

by

K. R. SRINIVASAN, M. A.,

LECTURE I

At the outset I may be permitted to thank the organisers of the "Prof. T. Balakrishnan Nayar Endowment Lectures" and the Director of Museums, Tamil Nadu State who is also the head of the Madras Government Museum for inviting me to deliver the first two lectures in the Series, provided for in the Endowment. I deem it, indeed, a privilege, particularly because of my long acquaintance in the past with the late Prof. Nayar and his scholarly personality and my equally long time association and contact with the Madras Government Museum, which is the venue of this first set of two lectures. It was in this large multi-purpose Museum of national status that I, as a student of the Sciences, holding a Master's Degree in Natural Science, was initiated into and trained in Archaeology, Epigraphy, Numismatics, Art, Architecture and Iconography, besides the other sciences including Museology; an alround training in all its branches, which was in the mid thirties. My contacts with the late Prof. Nayar, too, commenced from almost the same period, which later, sporadically though, were kept up even during my sojourns in other parts of India as an Archaeological officer. The awareness of the fact that the late Professor was a Historian and a keen Archaeologist made me choose some aspects of our Ancient History and deal with them by imparting Archaeological perspectives. Before I venture into the talks I pay my respects to the memory of my late revered friend Prof. T. B. Nayar, (as he was more familiarly known and called) and after expressing my gratitude to the Madras Government Museum, which 'broke' and made me an Archaeologist in order to enter the field as a professional archaeologist, more, I should say, as a continuing student of Archaeology, which still, I feel, I am at seventy five.

In the two separate talks, that are notified by the sponsors as 'Lectures', I only propose to share my thoughts or rather think aloud with you on some aspects of our ancient 'Culture or Civilisation', the thoughts emanating from my doubts and my attempts at resolving them. In so doing, or thinking aloud in your company, I take shelter under the wise saying of Albert Szent Gyorgi which is :-

> "Research is to see what everybody has seen
> and to think what nobody has thought."

But our thinking may be correct or not, and our ideas acceptable or otherwise but we can think all the same.

Accordingly we may contemplate on some aspects and features of the Harappan or 'The Indus Valley' civilization along with the Vedic civilization of North India in the two talks. Much has come to be known about these two 'cultures' or 'civilizations' but we propose to look at them from new or different perspectives.

'Culture' in archaeological parlance takes into its definition, an estimation and evaluation, individually and as a whole, of the particular assemblage of artefacts and other material objects of civilisation, left by a people, indicating degrees of ingenuity, skills in crafting, inventive faculties and idea and the levels or degree of advancement and sophistication-that all, together, would reveal a picture of the people concerned, their ways of living and thinking and their ethos in the mileau. The 'historian' comes into the picture of such a study, when 'writing' and 'written words signifying a possession of a language by the people make their advent and he is able to decipher and narrate in a methodical and chronological pattern the reconstructed story of the people. This would be quite unlike the reconstruction by the 'archaeologist' from the material of human activity and achievement disclosed from a site or a series of cognate sites, or from the work of a mere compiler or annalist. Language, as a common factor, engenders unity of all the people in a region in which respect it acts as a great force in the matter of producing an integrated 'Society'. The saying and literary works therein generate the common and basic norms of a 'culture' and contribute to the history of their thoughts, aspirations and achievements.

Viewing things against such a background we may realise that each one of the two cultures we have chosen for our thoughts, lack one or other of the criteria mentioned. The Harappan sites have, on excavation, thrown up from the bowels of the earth so much of tangible material-objects of a highly advanced civilisation, urban and rural, but there is only a mere indication that the people had a language of their own, which is, perhaps, expressed in their numerous steatite seals, sealings, that is to say the impressions of the seals, as graffiti scratched on their characteristic pottery or sometimes painted on them. They are still 'mute' to us—Mute for want of a satisfactory decipherment. They are found in the form of 'pictographs' or 'ideographs'. From the point of view of Crypotgraphic theory, the Harappan script can be deciphered only if one can reduce it to some known language. The 'script' still remains unknown. Attempts at identifying the language or the meanings or sound values of the signs and symbols by employing diverse methods, including science of statistics, concordance etc. and the use of the computer, too, have left us, practically where we were at the beginning. In a word we can say that they have still defied satisfactory decipherment and attempts at comprehension. The last word in this matter is still to be said, Thus the culture still remains in the realm of proto-History and can bid fair to enter the realm of History only when their 'writing' or 'record' is deciphered and the message they communicate is intelligible to all sections of scholars.

As if in sharp contrast, the Vedic-Epic culture of pre-Jaina and pre-Buddhist times (or we may say the pre-Asokan times) remains an enigma, equally

Here we have a considerable corpus of literature, noted for its profoundity, quantity and quality, but 'unwritten' in the sense that it was not committed to writing for a long time. Hence the Vedas and Vedangas are called in our ancient Tamil *Eluda-K-Kilavi.* It has come to us, yet, to the present day through millennia, in the same form, by word of mouth-transmitted from generation to generation by recitation, according to set norms, caught by the ear of the disciple, committed by him to memory, to be transmitted again by vocal recitation, hence called *Vaymoli* in ancient Tamil. Since the perceptive organ is the ear and not the eye as in 'reading' it becomes *Sruti* and since it is committed to memory *Smriti* in Sanskrit. Its pristine purity has been maintained or preserved through the centuries by an ingenious and unalterable system of 'notation', intonation *(svara),* pause, meter and the like. Such transmission from mouth to ear and memory was not mere rote but was followed by reflection of the matter and content and thus the faculties of recitation, receptivity, and retentivity developed into ratiocination that attained great heights in thinking and philosophy. Here in this case we have a highly effloresced literature that is able to tell us much about the high civilisation and ethos of the early Aryans of India, but whose material remains such as structures, artefacts and the like are too scarce. Possibly so, because of their very simple ways of life, bereft of the sophistication that the Harappan remains reveal. Here we have a unique case of people who are very 'Vocal' and hence 'audible' but who have left no written records.

As Albrecht Weber says "the Indo-Aryan language is not in its first period 'Sanskrit', *i.e.* the language of the educated, but is still a popular dialect, while in its second period the people spoke not 'Sanskrit' but Prakritic dialects which arose simultaneously with Sanskrit out of the ancient Indo-Aryan vernacular". We shall restrict our thinking to the early phase of the Vedas and the Epics. From the more ancient part of the *Rig Veda* we find this Indian race to be already settled down on the north-western part of the Indian sub-continent-in the Panjab and even beyond the Panjab (five rivers), on the Kubha on the west in Kabul, while on the east it was upto and on the Sarasvati. This region of seven rivers is denoted as the 'Sapta-sindhu' and of its occupation was more or less after the Iranian branch of the people had parted from the main stock. The literature produced by these early Indo-Aryans, who eventually spread east-ward to the Ganga - Yamuna doab, forms the earliest known Indian literature and a very much effloresced one at that, even as we see the very highly effloresced state of the Harappan material civilisation from the very time of their arrival into the scene, almost with a bang. This very much 'vocal' and 'audible' Vedic-Aryan phenomenon contrasts, as we have said, rather sharply with the Harappan ethos in which though we dimly recognise a 'script' of their own and not their language, a factor which make us call them in a way 'mute' yet. The available Vedic and Epic Literary sources afford sufficient material for an understanding of the heights of culture attained by the people, their ways of life, their ideas and ideals, activities and achievements, in short their society and social organisation. This literature, of an outstandingly oral tradition, if taken as 'record' will tend more to push the people into the realms of 'History' than oblige us to retain them within the frontiers of 'proto-History'.

Since the sensational discovery of the Harappan sites of Mohenja-daro and Harappa (both, today, in Pakistan) in the years 1921-1922 subsequent systematic explorations made during the last sixty years, have brought to light scores of sites with phases in their stratification definitely assignable to this characteristic culture as revealed by scientific excavations. The distribution of the sites not only reveals the potamic predilections of this unique culture but also the vast area covered by it spatially. The geographical extent as could be deduced from their provenance and distribution, stretches from the foot hills of the Himalayas embracing the upper reaches of the Indus (Sindhu) and the Sarasvati and the Drishadvati river systems, down the rivers themselves, and up to the lower reaches of the Narmada and the Tapti, and one can say even to the head of the Godavari basin, if we include the recently discovered Daimabad site, on the south. On the west it almost touches the Iranian border with Baluchistan where 40 Km. on its east we have Suktagen.dor on the Dasht, some 50 Km, north of the Arabian sea coast line, with another site Sotka-Koh on the Pasni estuary, 130 Kms. east-south-east of Suktagen-dor. On the east many sites touching the Yamuna have come to light. Thus one finds that the Harappan culture was the greatest and the most widely spread among the contemporary Bronze-age cultures of West Asia and Egypt, and, at the same time is one that exhibits much higher degrees of development and sophistication. The earlier calculations of the date and duration of this culture made on the basis of comparison with dated West-Asian cultures, primarily taking into consideration similarities as found in the seals, have since been checked up from fresh material collected by employing the modern Carbon 14 method of dating. The duration of the culture has thus, been fixed as between C. 2,500 B.C, and 1,700 / 1,500 B.C. The sites discovered so far include both the metropolitan or urban cities and humbler peasant villages or rural settlements, The former is characterised by the dichotomy in its lay-out on two adjacent high-grounds of differing height, the higher mound carrying the acropolis or citadel and the lower the general town-ship. This incidentally reminds us, Tamils, of the term '*Mettu-k-kudi*' in a town or village which refers to the elevated part occupied by temples, other institutions, and the higher echelons of the Society, while the lower area was to be occupied by the others. Besides the two Key-sites or nuclear settlements, namely, Mohenjo-daro and Harappa, we can mention others such as Kalibhangan and Lothal as cities, the last one being a port in addition, possessing an ingeniously designed dock-yard for ships to berth.

Without going into the many other interesting aspects of this unique culture, which are fairly well-known, too, we shall confine our thoughts, here, to only a few of them. The 'seals' of steatite, mostly and a few of terra-cotta and their impressions or sealings on clay bullae or tablets mostly exhibit two components in their contents. They are theriomorphic including natural animal figures or forms, quite true to life, and other '*Ihamrigas*' 'mythical' or legendary animals of unnatural form on the one hand, the other being 'signs' and 'symbols' of the nature of 'script'. Such occurs as cylindrical seals. too, in addition to the flat ones, and the 'script' is often, also, found scratched with a sylus as post-firing graffito on pot-sherds and pottery, as also, sometimes on bone or ivory pieces or artefacts. A few such 'letters' painted with brush on pottery are also

known. What interests us most and induces thought are the 'seals and 'sealings' with the combination of theriomorphs (real and pseudo forms) and 'script' particularly the true-to-nature forms of animals, individually by themselves or in relation to what we may call the 'letters' of the script.

The bio-spheric condition and eco-system indicated by the animals or wild beasts represented in the seals and sealings, considered alongside of the chosen potamic ethos of the civilisation enables us to picturize the ecological mileau, rather precisely. The settlements were on open or 'opened-up' areas amidst dense ever-green and marsh bordered forests, located on fairly high ground and yet exposed to inundations by the rivers and rivulets swollen by excessive rain or by the melting of the Himalayan snows. The occurrence of such floods have been evidenced by indications met with in the 'excavations'. For instance Mohenjo-daro had seven periods of occupation and Harappa eight and here and elsewhere the disruption of the continuity by floods as one of the causes is evidenced. The rivers, too, seem to have been shifting beds and courses and the Sarasvati and the Drishadvati, the then affluents of the Indus, have since dried up and have lost continuity and become rivers of the past. It is on the surviving length of the old river, now called the Gaggar, that Kalibhangan was discovered.

The enormous quantity of Kiln-burnt brick structures found in the excavated sites (un-burnt clay bricks are also found used) would have meant a large demand for and plentiful supply of wood-fuel to fire the Kilns, as also by the potter who made the pottery and in the kitchen. This feature would, in turn, presuppose extensive forests in the vicinity of the cities and the other settlements that, only could have met the needs of the Kilns, the potter, the '*tandoor*' type kitchen hearths or ovens as also the timbering in house construction, especially for the terrace roofs. The inadequate modes of transport should have necessitated proximity of the settlements to the forests.

The nature of the forest or sylvan flora can be deduced from the nature of the wild fauna, too, specimens of four of which are found depicted in the seals, particularly the four animals found as to have been quite familiar to the folk and as such oft repeated. They would be the 'Royal Tiger' (*Panthera tigris*) - the large striped tiger familiarly known as the 'Royal Bengal Tiger' to the shikaris (and as *Vengai* or *Valvari Vengai* to the Tamils, the Indian Elephant (*Elephas maximus indicus*), the one horned Indian Rhino (*Rhinoceros unicornis*) and the wild Indian Bull (*Bos bubalus B. indicus*?), with large hump, prodigious dewlap, vertical incurved horns, and of bulky stature. The last mentioned herbivorous ungulate, the bull, has become more or less local by breeding, and continues to survive in Punjab and Sind as a developed domesticated breed. At the same time we find that the other three beasts have been pushed far west into the Bengal, Nepal and Assam belt in the north-east of our Indian sub-continent, where only they could find a congenial habitat or environment for survival till today. This as we shall see in the sequel, could have been due to the undue interference with the eco-system by the expanding area of occupation and increase in population of the east-ward moving Aryans, a virile race needing more *lebensraum*. This could be only in the wake of

active deforestation and consequent changes in the climate and physiography of the land.

The presently known natural habitat of the elephant in North India is dense evergreen forest along the foot hills of the Himalayas extending from Uttar pradesh through the Bengals, Nepal and Assam and in terrain upto an elevation of 5,000 feet above sea level. The foot prints of the elephant have, however, been noticed in elevations upto 12,000 feet. It delights to live in bamboo forests the tender leaves and vegetative buds of which it likes, and can equally thrive well on marsh grass and forest leaves. It shuns the direct heat of the sun and retires into the cool shade of the forest and takes to water avidly, often. A few among them are albinos (white elephants) because of the lack of the normal grey or slate-coloured pigmentation of their thick rough skin or hide. In India, the maleelephant or the bull is the tusker, usually, while the two incipient tusk-like maxillary teeth are concealed by the upper lip in the female or cow-elephant, which is of lesser stature and weight than the bull.

The rhinoceros comes next in size and strength to the elephant (after the Hippopotamus which, however is of lesser weight than the rhino). It is also a herbivore and inhabits a combination of dense forest and marsh land with tall marsh grass and reed and thrives on leaves and roots. The single-horned Indian rhinoceros, hence the Zoological nomenclature *Rhinoceros unicornis*-in which 'rhino' means the snout or nose, 'ceros' the horn and 'unicornis' specifies the single nature of the horn which grows to a height of 1 to 1½ foot, strong and sturdy, over the tip of the snout. Unlike the tusks of the elephant, which are only outsize projecting teeth, so to say, which is of dentine or ivory or wholly solid, and the horn of the bull which is a hollow horny sheath covering a bony core, the horn of the rhinoceros is made up of a core of closely agglutinated sheaf of stiff, thick hair of the skin covered by a thick horny sheath. The body of the rhino is protectively covered, as if by armour plate, by downwardly hanging thick strong folds of hide impenetrable to spear or arrow or knife edge, and hence used as shield or buckler by warriors, held in hand to ward off dagger, spear or lance thrust, arrow-hit, or sword cut. The white rhino is also known in India, as it is in Africa.

The tiger occurs at present in all parts of India except the Rajputana desert, Punjab, Cutch and Sind, which regions, incidentally, comprised the Harappan area of yore and where it appears to have been common and well-known to the Harappan people as their reproduction in their seals would tell us. It lives in moist, ever-green forests and also frequents dry scrub jungle and grassy marsh land overgrown with tall grass and reed, where its striped skin acts as a camaflouge, helping unwary prey to come into its clutches. It is, thus, found also in the grassy marsh land on the lower reaches of the Ganga and the Brahmaputra and in the Sunderbans. It is equally at home in water as an acquatic, can even attack elephant calves and eat animals carcass. It is one of the most agile and strong animals, and it becomes a man-eater, particularly when aged and less agile and after having once tasted human blood.

The bull, a strong animal again, but a herbivore armed with cervical horns for defence, can thrive in all the above said habitats. We recapitulated these facts of zoology only to facilitate our understanding of the ecology and the floral and faunistic inter-relations in the eco – system in which the Harappans lived and chose these animals for depiction in their seals. This bionomic study becomes relevant in that the familiarity to the Harappans with these four forms of wild life, implies their presence in that area in their times and indicates the environmental conditions that obtained, which should have been the same as obtain now in other regions where the animals under reference thrive today. While they have become extinct in the western part of North India, even in the eastern end where they are still extant, they have been very much hunted down during the recent era of fire-arms and reduced almost to the point of extinction and therefore needing special legislation for their protection and preservation and the simultaneous formation of special sanctuaries or reserves, this, side by side with measures of protection and conservation of dwindling forest area and prevention of deforestation in order to maintain sufficiently their population and natural habitats. So much had to be said by way of recapitulation to convince ourselves that Punjab, Sindh, Gujarat and Rajasthan had a much heavier rainfall and were more intensely forested in contemporary Harappan times than what obtains there today, a contrastive change that has come over these regions during the course of four millennia.

The fact that these and other wild fauna, like deer, prevailed in or dominated over the landscape, inspite of human interference into the ecology of the area inherent in the spread and founding of settlements by the Harappans, would only indicate that their activities in deforestation and hunting or trapping of the wild animals were not so pronounced or efficient as to obliterate the native fauna. These Bronze-age or Chalcolithic Harappans could not have been such efficient lumber-jacks equipped, as they were, only with copper or bronze axes and adzes, as the later day iron-axe and adze users could have been. Nor could they have been such big-game hunters armed, merely with lances or spears, and arrows with copper or bronze heads, even granting that the naturally soft beaten copper was of a hardened variety, and bronze was a better alloy in respect of hardness and moulding facilities. They must have been almost utterly defenceless against such beasts as the ferocious tiger, the rhino, a powerful charger with its weight and horn and protected by its armour of hide and the mighty, tusked, wild elephant not to mention the powerful, horned wild ox. Possibly they could domesticate, eventually, the last mentioned-the bull, as they did in the case of the lesser animals such as the goat, sheep, fowl and dog and hunt deer and the like. The skeletal fragments of these found in their habitation area go to prove this fact. If some ivory was found, and that too very rarely, the material could have been obtained from elephants that died in fights, or met with natural death.

We may, perhaps, not be wrong in thinking that the Harappans, therefore viewed these four animals with awe and respect and more or less deified them as super-human in prowess and power and made fetishes or totems of them. They could not have tried, so actively, or wantonly, to kill these, and even granting that

they appropriated the horn, hide or skin; claws and sharp teeth from the dead animals, for their use, they will not show up in an excavation now since they cannot have survived burial for long time. We do not have specimens of their bones, either, coming out in our excavations of the habitation sites. Thus in addition to these invincible animals considered to be vested with super-human powers, which they could see moving about in their forests and marsh lands and their destructive powers which they were aware of, their imagination could have created strange, unnatural combinations of animal forms, which they could not see with their eyes, yet worship or revere, as invisible spirits, zoomorphic mythical representations, *Ihamrigas*, as found depicted on their seals along with the natural indigenous wild animal forms. We, in the state of our present knowledge, can only guess or wonder about their evanescent or elusive religion and language.

This line of thought is rendered possible by another circumstance. Daimabad, situated on the left bank of the Pravara near Srirampur District, Ahmadnagar of Maharashtra, constituting almost the southern frontier of the terrain of Harappan sites has yielded, on excavation, in its Phase II, a fragment of a vase with three letters in the Indus (or Harappan) script, a button seal with a single letter of the same script and a pot-sherd bearing a painted letter, indicating the particular phase of human occupation as clearly Harappan. On the basis of stratigraphical correlation four bronzes (cast in that alloy), or icons, of an elephant, a rhinoceros, a buffalo and a chariot drawn by a pair of bulls yoked to it, with a standing driver on its open deck, discovered as a hoard from the same place, have been assigned to this phase. The chariot resembles very much such types called *Rekla vandi* drawn by a young bull or colt, so yoked to the *rekla*, and driven, particularly, for training or breaking them as draught animals or in racing. Such bull or colt-drawn *reklas* are in common use to-day, particularly in South India and Tamil Nadu. The Daimabad *rekla* miniature, bull-drawn, has, instead of the later day spoked, wheel, the primitive disc wheel, which is even todoy common in the interior of Madhya Pradesh and in Sind. The three animals, too, are mounted on disc-wheeled platforms. Of the three, the elephant, about 10 inches or 25 cm. high, is the biggest, the rhino is comparatively smaller and about 8½ inches or 19 cm. high. While the elephant and buffalo are cast true to nature in all respects, the rhino in the hoard has a rather elongated snout with a horn rising from near its front tip and with a hide-bound body, the hide indicated by schematic fold lines. The entire hoard, it should be noted, came earlier from the same site of Daimabad. The presence of the rhino in the hoard is extremely significant because the animal was rarely represented in Indian art, save Harappan, and thus its inclusion in the hoard is, a token of Harappan affiliation, if not origin. It cannot also be said to be a denizen of this area. The analysis of the bronzes for determination of their elemental composition by the method of atomic absorption spectrophotometry, has revealed that the alloy is 'arsenic bronze' and as such similar to all the bronzes derived from Harappan centres, which contain a considerable proportion of arsenic. Incidentally it may be remarked here that a high arsenic content in the bronze and copper objects imparts a hardness to the metal or alloy, according to H. N. Coghlan and Lamberg Karlovsky (of Harvard), authorities on ancient metallurgy. Such studies of the 'impurities' of the ores or

source material, such as arsenic in our present case, can lead to the tracing of the source of the raw ore, and help in determining whether the source was indigenous, or whether the raw ore or extracted metal is of foreign origin. We shall leave this question here to the metallurgist-chemist without dilating on it further.

Reverting to our present trend of thinking, we have to note that these four bronze animals are too big and too heavy to be considered as mere toys for the delectation of children; they could have only been fetishes or totems in religious worship and perhaps drawn about in procession. If the snout of the animal, distinctly and unmistakeably identifiable as a rhino from its general form, hide-bound body, and more than all the single (*ekasringa*) on the snout, approximates in its slight elongation the snout of a wild boar, it can be explained. As an article of fabrication in the southern-most late-Harappan outpost, far down from the centre in the north-west Indian region, the natural home of the rhino, the local bronze caster should have been less familiar with live specimen in its far away native haunt. But was more familiar with the wild Boar (*Sus Cristatus*) of the local forests, and as such could have made the bronze so under the general idea that the rhino, by whatever name it was known to the Harappans of those times, was something like an over-sized boar with a single frontal horn over its snout and with a thick skin, or hide hanging in folds. The bronze 'rhino' under reference does not possess side-tusks (*damshtra*) on the lateral parts of the mouth in the snout.

In such a context of our reflections on the religious significance of these theriomorphic or zoomorphic fetishes, we may bring to mind another interesting fact. The so-called '*Pasupati*' seal from Mohenja-daro bears a depiction of a two-horned anthropomorphic 'deity' surrounded by four animals-an elephant a tiger, a rhino and a buffalo. This combination would appear to accord with our suggestion about the religious nature of the animals, as could be inferred from the Daimabad find of bronzes.

The horn over the head of some beasts, should have impressed early man in general; and the ancient man of India was no exception, as symbolic of powers superiority, and prestige and spiritual-magical powers. As such the idea is found persisting even amongst the tribal folk of north-east, central and southern India, who wear a head dress fitted with two buffalo or bison horns, one on either side, particularly the chiefs among them, when in their full ceremonial attire. The presence of such a pair of transversely striated buffalo horns on the head gear of the central human figure in the Mohenja-daro seal purports to his being superhuman, in power and prestige, and as such worshipful. Even today in our conversation, here in the Tamil country, while questioning whether a particular person under reference is so unique, great, authoritative and extraordinary, we ask in exclamation, 'has he got a horn grown over his head', or 'is he a horned fellow' or 'are there two horns grown on his head'? and such like questions. We are also reminded of the sage Rishyasringa (*Kalai-k-kottu Mamunivar* in Tamil) of the Sanskritic sources, in this connection. Sir John Marshall describes the seal as follows:-

"The god who is three-faced is seated on a low Indian throne in a typical attitude of Yoga, the lower limbs are bare and the phallus (*Membrum virile* or *urdhvamedra*) seemingly exposed. Crowning his head is a pair of horns meeting in a tall head dress. On either side of the god are four animals, an elephant and a tiger on his proper right and a rhinoceros and a buffalo on his left. Beneath the throne are two deer with heads regardant and the horns turned to the centre".

The other animals depicted in their respective natural forms in the seals, include, beside the deer, as mentioned above, the ox, wild goat etc. We need not pause here to mention the other religious cults of the Harappans, inferred from other evidences, such as the cult of the 'Mother Goddess', but think a little more about the seals and their 'inscriptions' or 'script'.

One major advance made in the study of the script is the significant discovery that the channel of writing is 'sinistral', that is from the right to the left. This has been made clear by the examination under a lens of the writing scratched by a sharp stylus on the pot-sherds. The left-ward horizontal extensions or strokes of a 'letter' are overlapped by the vertical part of the right side of the next 'letter' to the left of the previous 'letter'. Of the two crossing lines, the scratch of the left letter is continuous, while that of the right letter is cut. As a corollary this leads to a fundamental question to be answered while the seals and sealings are attempted to be read or deciphered. In the process of deciphering, reading and interpretation of the possible 'word' formed by a line of pictographs, animal forms (natural and mythical) and script-like signs are we to try to read from the right to the left in the sealings or impressions that are to be the 'positive', (as in the case of a photo-print or plaster cast from a mould), and in the reverse direction in the seals themselves containing the figures (as in a photo-negative, or a mould for a cast or as in a mirror reflection)?. This need for observing the principle of lateral inversion as between a sealing and a seal inherent in the above discovery may, perhaps, have to be understood, in attempts to read the sealings and seals after sorting out the ones from the others.

Another thought that has been engaging my mind for long and which I have shared often with archaeologist friends and which I would like to share with you here, for your thinking, is about the purpose, purport, or utilitarian value or aspect of these 'inscribed' seals and their impressions They, instead of being a ritual type carrying a 'motto' or 'legend', may as well be 'commercial' in nature, considering the fact that the Harappans, as other evidences show, were, among other things, engaged in active trade and commerce. Shall we be wrong in thinking that the seals of superb craftsmanship were used as distinctive emblems or marks of different 'trade guilds' or 'merchant guilds' or 'manufacturing' groups?. Were they intended to be stamped on the packages of their merchandise or commodities, that were to be sent out to other places in the then civilised world by land or sea?. The greater concentration or provenance of such seals in the metropolitan or urban sites, such as Mohenja-daro, Harappa, Kalibhangan, Lothal, Banawali, etc., than in the rural settlements, their occurrence side by side with graded cubical weight measures or units, uniformly found in all the sites suggesting a common or agreed gravimetric standardization, seem to point to such

a conclusion. More than these the rope marks on the under side, as distinctly observed in some cases of the sealings, carrying the impressions of the seal on their upper side would indicate that they were laid as wet clay lumps or bullae over the knots of the ropes that were fastened round the packages and stamped with the seal as we do with the seal and sealing wax for our parcels and packets today, too confirm the same view. Though very much removed in point of time and space, we may cite here an instance of a similar procedure that obtained, down here, in the early Chola port city of Puhar or Kaverippattinam in South India in the 2nd century A. D. The early *Sangam* Tamil Literature refers to the import and export of diverse commodities and to the packages-*podi* or *chippam*, for export 'sealed' with the tiger emblem of the Cholas and lying in the well-guarded ware-houses of the port. R. S. Bisht, who excavated Banawali on the old bed of the Sarasvati, a proto-urban chalcolithic Harappan settlement recently, agrees with me in thinking so. He opines that it is quite possible that they (the seals) 'might have been used for sealing packages of commercial goods or as passports or token of identity and it is also possible that they were used as merchants' trade-marks and not just as royal signets (*lanchana*) or emblems of priestly authority'. Such seals with credal legends, of the Buddhists or with merchants' names have turned up in numbers from the early historical sites like Vaisali and others. Dr. Y. D. Sharma's excavations at Rupar has revealed a number of terracotta sealings with script in characters of the 4th-5th centuries A. D. in one of the levels chronologically ascribed to the time bracket 200 B. C. - 600 A. D. Many evidences have come to light from the excavation at Lothal, the Harappan port city, of trade contacts with the then outside civilised world, especially with cities of the Sumerian and Elamite civilisations. A Persian gulf seal was found in Lothal and similar types of seals with Indus (Harappan) characters and motifs were found in Ur.

But at the same time it must be said that, if the seals were so used as trade marks' or 'marks of authorisation' in commerce, the impressions on clay laid over the roping of the packages should, naturally, be expected to be found more (as cast-offs after opening of the packages) at the receiving end in the sites that imported the merchandise than in the exporting or dispatching place of origin the Harappan centre. We seem to have them in plenty in the Harappan sites themselves. If that be so, does it indicate more internal trade as between Harappan settlements within their area itself? The answer is yet to be found. In such a quest the separation of the seals and sealings, as 'sheep and goat', their classification according to sites and types and picking out of cases, if any, of a seal and its very impression or sealing occurring side by side in the same place, would be the *sine-qua-non*. The sealings or impressions can be taken as relating to trade, as mentioned above, only if it is of dried clay, as it should be if it was stamped on a package rope or packet, but if it is a terracotta or burnt clay the fact would nullify its chances of its ever having sealed a package in trade. This could not have happened unless there was a fire in the godown and the package, rope and all got burnt. In such cases of terracotta sealings of impressions, they can be considered as something like tokens or talismans or charms. We leave the question open for the nonce to take them up again for cogitation after some thinking on the Vedic culture.

II

In this second talk we shall set aside the Harappans and their ethos in general for a while to come back to their problematic seals and inscriptions again in the concluding part of our talk and bestow some thought on the 'waves' of the Vedic Aryans.

As mentioned earlier we recognize them as occupying the Saptasindhu region on the north-west of the Indian sub-continent and as migrating gradually eastwards to occupy, ultimately, the Yamuna-Ganga basin and its immediate east. We know of them only by their language and eternal literature-the Vedic hymns, the post Vedic Compositions and the Epics in that language, till we come to the times of Mahavira, and the Buddha, who founded what we may call protestant forms of religion therefrom. This preceded, in point of time, by about a couple of centuries the wonted starting point of Indian Historiography commencing with the Greek invasion of India in 326 B. C. that has long been the sheet anchor of Indian historical chronology.

The eastward movement of these people as a viable growing well-knit and socially well organised community marks an elan for finding fresh fields and pastures new, literally so as they were an agricultural-cum-pastoral community and their great need for *leben-sraum*. This necessarily must have meant the conquest and subjugation of the autochthonous people of the terrain, rendered easy by the superiority of their logistics and ballistics. It was all the time more a cultural conquest of the local inhabitants, 'Aryanisation' as it is often termed since the Aryan genius was such, as it has been all along in their later day expansion into the east and south of the Indian sub-continent, and subsequently beyond overseas. They imparted as much of their cultural ethos as they assimilated from those they came in contact with and this trait of acculturisation and genius of blending, marked the cultural rather than the political conquest of the race. Their superiorrity inhered in their equipment, a developed language, the swift horse, which incidentally would seem to have been yoked to their chariots, more often, than used as mounts for riding, the tamed elephant, and the bow and arrow besides the other weapons of offence and defence, namely the spear or lance, the dagger and sword, the club, the discus and the noose. Particularly with the advent of iron in use, the superiority of iron-made or iron-tipped weapons and skills in archery, which came to be developed into a regular science, the *Dhanurveda* was much enhanced A strong and deft bow-man came to be looked at with awe and veneration.

In the *Rig Veda* itself, Rudra the God represented as a complex figure and described as possessing apparently incompatible qualities, as both fierce and benevo lent, as creator, preserver and destroyer, yet, a venerable *ensemble*, is said to wield lightning and thunder and to be armed with the mighty bow and sheaf of destructive arrows. The '*Satarudriya*' hymns implore him, in its earlier part, to abate his wrath and not let loose his destructive arrows on them, his worshippers, but turn them aside or discharge them against their enemies, or even put them by in the quiver, and what more hang them along with the bow on the nearest tree. The very first hymn of the *Satarudriya* runs thus:-

" Om namo bhagavate Rudraya | Namaste
Rudramanyava utota ishave namah | Namaste
astu dhanvane Bahubhyam utate namah |
Yata ishu sivatama sivam babhuva te tanuh | "

and so on.

The later part praises him for his benevolence and his manysided personality, as the Chief of every branch of learning and avocation imaginable. The first hymns, the first lines of which we quoted, after making obeisance to Rudra beseeches protection from the fury of his arrows, (*ishu*), the might of the bow (*dhanus*) that discharges them, the hand (*bahu*) that wields the bow, and the body (*tanu*) of the possessor of the hands with the bow and arrow, and his very person (*tanu*-body) and prays that all of them be auspicious (*sivatama*) and doing good (*sivam*) to them- the chanters or worshippers. We think, again, of the epic-hero, Arjuna of the *Mahabharata* an adept in archery, and a *savya-sachi* (ambidextrous), who can hold the bow in action by either hand. We think also of others equally skilled in the art, such as Karna, who was protected by an armour, possibly of iron plate or a chain mail coat, and Acharya Drona, the preceptor in the science from the same epic, among others. We recollect the *Ramayana* telling us about the same mighty bow of Siva, the *Sivadhanus* which Rama bent in order to string it, but broke it too in the bargain, and won the wager for obtaining the hand of Sita in wedlock. The association of Rudra-Siva considered to be of pre-Vedic or non-Vedic origin and assimilated into the Vedic pantheon as a combination of the powers and aspects of other gods therein with the bow, of all weapons, appears to be rather significant. The fear engendered by the bow and arrow, and the awe with which the bow-man is approached makes us, ask ourselves certain questions, 'Were not the people of this very early Vedic phase possessors themselves of this weapon of war and chase? Were the weapon and skills in its use and knowledge of its superior potentialities, not originally their own but obtained and acquired from somewhere else during their sojourn in the north east of India? We shall pass on with out attempting to find an answer to such questions. Suffice it to say that it was ultimately the most used and effective weapon in their hands.

The incident narrated in the *Mahabharata* of Arjuna, the great archer, getting his famous bow *Gandiva* presented by Soma to Varuna, Varuna to Agni and by Agni to him, when the latter assisted him in the destruction and burning down to ashes of the Khandavana forest. Soma, we may remember here, is identified with Rudra, as again in the *Satarudriya* in the prayer - *Namah Somaya cha Rudrayacha-Namah Sankhaya cha Pasupataye cha* etc. Evidently we are made to think that the needed clearance of the Khandavana, near Kurukshetra, was a case of adopting 'slash and burn' method, with the axe and fire, and the extermination of both the forest and the wild denizens in it and that tried to escape, by his specially gifted bow and arrows. Here too, one may note that the double act of cutting down and burning forests and destruction of wild life was deemed to be a pre-requisite for clearance of a site for ultimate settlement of the people and this was the practice from earlier neolithic times even adopted for their temporary or shifting cultivation. This only came to be on a greater scale with the increase of population sophistication,, and use of improved tools.

The entire chant, especially the earlier *anuvakas* of the *Satarudriya* reveals the sense of awe engendered in the minds of the Aryans, by the arrow from the bow of Rudra-Siva. They do not seem to be so afraid of the *trisula* (trident) and *parasu* (axe) which are his usual attributes or weapons in his iconography. This aspect is further stressed by the episode of Arjuna obtaining the highly potent *Pasupatastra* from the mighty archer Siva, as boon, after undergoing a severe penance for it. This is narrated in the *Mahabharata*, again, and in *Kiratarjuniya* of the later poet Bharavi.

From this, we now come to think of the frequent references to dense forests in the area of early Aryan settlements. We have them in the *Satapatha Brahmana* (13, 3,; 7, 10) and in the *Aitareya Brahmana* (3: 4: 4). The Vedic *Aranyakas* (or forest portions) annexed to the *Brahmanas* were the portions to be studied in the forests by the sages and also the disciples that were taught there. They were created there in the forest seclusion. This would, perhaps, imply a certain measure of retention and conservation of forest area, inspite of the more needed clearance or deforestation for settlement. A detailed account of the traditional burning of forests is given in the *Mahabharata* (*Khandavana parva* I, 222-234; VI, 1, 2, 3, 16). With the coming into use of iron and with it iron axes and adzes, such clearance of forests could have become more easy, efficient and speedy than it could have been with copper or bronze axes and adzes, even granting that the copper or bronze were hardened ones. In their early stages of spread into the Aryavarta, the forests could not be cleared so well, except for a narrow strip or corridor on the low water shed between the Punjab and the Yamuna-Ganga basin. Further north-west the Harappans had cleared the area somewhat, for their own new settlements, while their other settlements, were upon still earlier settlements. This may be the cause that detained the Aryans in the Mesopotamian tract between the Sarasvati and the Yamnua, with its centre round Kurukshetra and Delhi-former Indraprastha before they resumed movement further east and south.

The metal 'Ayas' is mentioned in various places in the *Rig Veda*, and it was taken to mean one of the metals-iron or copper, or even gold according to the context. Still it has been pointed out that 'Ayas' would refer only to iron while 'loha' would be copper; furthermore 'Ayas' or iron is distinguished as of two varieties 'Krishnayas' (black) and 'Syamayas' (reddish brown-possibly rust). Some may think that the latter name would mean copper which is ruddy by nature. In later Vedic nomenclature the two metals are distinctly understood as 'Lohayas' or 'Lohitayas' for copper and 'Syamayas or 'Krishnayas' for iron. Digressing here for a moment we may note the Oxford English Dictionary deriving "iron" from the Old English "isern", "isen" equated with Old Saxon, Old Germanic and Old Norse "Isarn", Gothic "eisern", Germanic "isarnam" and that "iron" is from Old English "iron" not paralleled in other languages. The Sanskrit name "ayas" would thus appear to be cognate since 'ya' and 'sa' are interchangeable, as again so in Tamil, Telugu etc. *Cf Payaru-Pasaru* and other such examples. We should also think of the possibility of the ancients coming by meteoric iron, which perhaps, gave the concept of the 'Vajra' or 'Vajrayudha' made out of it, and the name because the meteor is accompanied by a bright flash, like lightning. This is only by way of a suggestion, in our present trend of thought.

The bow-rods were of bamboo or cane in humbler cases, but was often composite and made of cane or wood, horn and iron, incorporated cleverly in its make up, or of iron exclusively, in special cases, as for the use of Chiefs, Kings etc. Besides cane, bamboo or reed shaft with iron heads for the arrows of various shapes, replacing earlier copper and bronze, wholly iron-made arrows, often with tip dipped in oil and called *narasam* were designed to penetrate, when shot from strong resilient bows, thick hides as of elephants and possibly the vulnerable areas between the folds of the rhinoceros hide. It may be remembered here that shields and bucklers, held in hand to ward off arrow hits, spear and dagger thrusts, and sword cuts made of wood, metal sheet or rhino-hide were used in fights. These facts would enable us to concede that the Aryans could hunt and kill or fight not only the tiger but also the elephant (and also catch and tame it too) and the rhino either in a chase or when attacked or even when trapped in pits (called *payambu* in early Tamil literature in the context of elephant catching).

With all these facts in mind we can easily conceive the extent to which the then prevailing natural balance in the primeval ecosystem would have been affected, disturbed, and upset by continued deforestation. The existing balance obtained between the flora of moist, dense or ever green forest and marsh land, bamboo forests and the like thriving under heavy rainfall conditions under a sub-tropical climate, on the one hand, and a rich fauna including particularly the rhinoceros, the elephant and the tiger, among its 'beg-game' animals, besides others, on the other hand. The continued reduction of the forest cover would have eventually caused considerable decrease in precipitation, resulting in drier climatic conditions, standing in the way of natural re-generation of forests and even culminating with the onset of desert conditions, as in Rajasthan. The appearance of secondary formations-dry, deciduous and scrub forests and jungles, will not be congenial habitats for many of the older denizens, particularly the rhino, the elephant and the tiger which have been drawing our special attention and thought. No wonder those that survived killing, or death by over crowding when taking refuge in the forest interiors of reduced area, fled and took refuge in the undisturbed fore sts further east in the Nepal, Bengal, Assam and north-east frontier terrain on the Brahmaputra river system.

While we do not know yet by what names the Harappans called the four great animals which they have depicted in their seals-the bull, the rhino, the tiger and the elephant, we do know that the Vedic Aryans had definite names for them which have been transmitted to us today through their eternal language —Sanskrit and the Prakritic dialects that survive in one form or other. Not only names, but strings of names for each occur in their lexicons, as also vivid descriptions, in different contexts, of their form and habits. They could domesticate the bull along with the King of the species, and use the former for stud purposes in cattle breeding and as draught animals, they could catch and tame the elephant and use it in war and hunt. They could also kill the tiger, that provided the much prized furry skin, that would keep off cold as mantle, and use the claws and fang for offence or as ornament (We are reminded of the name-*puli-p-parrali*-necklace with tiger tooth pendent of the Tamil *Sangam* literature, though much later in point of time).

The horn of the bull, as also of the buffalo, were too useful as dagger-like weapons, or the bulls horn with a hollow interior serving as a vessel in ritual. They could also, kill the rhino, or trap and kill it for its hide and much prized horn. The former could be made into a shield or buckler. In the designation or nomenclature '*Khetaka*' for such a shield, '*Kheta*' means the hide of rhinoceros This animal, the key-animal of our talks, is known by different names such as *Gandangah* and *Gandakah*, masculine, while the female of the species is called *Gandaki* which significantly enough, is the name of an affluent or tributary - the Gandaki (Gandak) of the river Ganga, which became the river *par-excellence* of Aryavarta. Shall we be wrong in thinking that the river could have derived its name from that of the feminine form of the rhino-Gandaki, as a river, too, is feminine in its gender in Sanskrit and Indian-lore? Possibly its course ran through forest areas infested primarily by the rhino. This, again tempts us to think that the name Gandi-dhanvan of Arjuna, and makes us, ask ourselves whether Arjuna could have got the name because of his possession of a bow that was powerful enough to kill a rhino or Ganda and if there could be a possibility of the forest that he was reputed to have destroyed near Kurukshetra - Kandavah coming to be so named after the animal in which it abounded and hence Arjuna got the names 'Gandivin' and Gandi-dhanvan. Even otherwise the term 'Kandirah' means an archer, while Gandi or Gandiva are the specific names of his bow. Since we are not competent philologists, or scholars in linguistics we stop with just making the suggestion for whatever it is worth.

Not only the hide of the rhino was a coveted possession, but also its flesh was considered a rare delicacy. In India, the horn came to be considered a still more valuable acquisition. It has been very highly valued, all along in India, Nepal, Tibet and China, and the Far-east, as it is so even today, for its aphrodisiac and medicinal value and also for its magical powers and utility in ritual. A cup fashioned out of it by scooping out the core and retaining the seathing horn is considered very sacred. Libations of milk and water made with it as the container are deemed to please the *Pitris* or 'Manes' (ancestor spirits) immensely. Even the urine collected in a pot and suspended from the lintel of the front door frame of a house is considered to ward off evil spirits. Such was the veneration in which the animal has been held from antiquity. Though a bulky and seemingly ponderous beast, it is quite an agile one and like the elephant can walk fast, and even run with the horse in a chase over short distances.

The Indian rhino, has a single horn on its snout, hence named *Rhinoceros unicornis* by the Zoologists as opposed to its African Cousin, and the Sumatran species which carry two such horns, one behind the other, on the snout. The 'lesser Indian Rhinoceroses' now relegated to Burma, the Indo-Chinese Peninsula, Malayan Peninsula, and the Indonesian archepelago are all unicorns. The bicornuate African species inhabits Sudan. The Nile valley rhinos are white and large animals and the South African forms are black.

Evidently, Vedic literature had, certainly, not lost sight of the single-horned rhinoceros while giving it such names as '*Ekasirshah*', *Ekasringah* and *Ekasringin*, all meaning 'the animal with a single horn', This was not because they, like the

modern Zoologist-taxonomer, were aware of the existence of the bicornuate species in places outside India' but perhaps because of the single horn on the head (snout) that struck them as a rare feature compared to the familiar double horns of cattle deer, sheep and goat. The characteristic nomenclature '*Ekasringa*' applies also to the *Pitris* or Manes as it equally does to Vishnu. The *Purushasukta* chant attributes to Vishnu, not one but a thousand (in the sense of many) *sirshas* or horns *Sahasra sirshah Purushah.*

Incidentally one of Siva's name is Varaha-sringa. This brings to mind the term 'Svetavaraha, which combination is generally taken to connote the 'White Boar'. Varaha in ancient literature seems to have meant a medley of animal forms such as the Wild Boar (*Sus Cristatus* or the Sanskrit '*Sukarah*-note the first syllable *Su,* being akin to the Latin *Sus*), the ram, the bull, or even the crocodile. That way we may not, perhaps, be wrong in guessing that the term meant in the earliest times, the Rhino, too or exclusively the rhino, as 'the mightiest', and came to be transferred to the boar or hog that resembled the rhino almost in general form and appearance, though not in size and bulk, and nature of defensive annament, when the latter was bodily driven out of sight and beyond Ken, and forgotten, but for the memory, by tradition, of the general form.

We may observe, also, in this context that as in Africa, in India, too white-rhinos exist, even as we have white horses. The albino elephant Svetagajah' Sveta-dvipah, Svetakunjarah, which because of its rarity formed the unique mount-the Airavata, of Indra. Because of the white horse that was Arjuna's mount he came to be called Svetavahah, Svetavajin, Svetavahakah, Svetavahin and Svetahayah. Svetapingin is a name for lion and 'Sveta-dvipa one of the eighteen minor divisions of the then known continent. Therefore a random thought occurs as to whether 'Sveta' should uniformly mean 'white' in all the combinations and contexts, and if not, why it should not refer to an animal like our rhino, under consideration and if so whether Svetadvipa could as well denote the territory inhabited by it and where it was a speciality.

We, in our *Samkalpa mantra* that we recite before commencing any religious act, utter in the sequence the words '*Sveta varaha Kalpe Vaivasvata manvantare* etc. This we, Hindus, do while pin-pointing the place and time of our action, specifying the cosmological time, epoch, era, etc., down to the current year, month, day, *tithi* (days of fortnight) asterism (*nakshatra*) and day of the week, the geographical location of the place according to divisions and subdivisions in cosmology from the created universe, down step by step to the continent, country, territorial division, sub-division etc. to the name of the spot ultimately. The lexicons translate 'Svetavaraha Kalpa' simply as 'the period or era of the white boar' or 'the period of Vishnu in his third *avatara* (incarnation) as a boar.

We would all admit, that, as revealed by research in iconography, the concept of *avatara* (*amsa* or *purna*) of gods was a late-one, much post-Vedic. Particularly in the case of Vishnu, their earlier greater numbers came, ultimately, to be reduced to ten, the *Dasavatara*, which pertains to a very much later phase and time in the history of Hindu theology and iconography, evidently not earlier

than 300 B. C. We get the first iconographic concept of Vishnu in his Boar form, theriomorphic, or therio-anthropomorphic in the Gupta times of our history. The primeval or original concept of the mighty and invincible god could as well have been a rhino, which the early Aryans, if not the Harappans before them, knew and recognised as a mighty one, which was not easy to kill or subdue and which was born with a natural protective armour in the form of hide, which could be borrowed by them after its death for use as a protective shield. It was also known as using its strong horn while charging enemies and in digging up earth for its forage. The concept of Vishnu retrieving by uprooting or uplifting the earth from below the seas of the nether regions, would be more apt if he is conceived as the rhino, than as a boar, which is not a strict herbivor or vegetarian as the rhino is. The boar has only two short side-tusks or *damshtra* in its mouth and hence called *Damshtrin* and not *Sringin*. They are not the homologues of the supra-capitular horn or cornua of the rhino, but only oral and maxillary in origin and as such, 'teeth', as the zoologist would confirm. Thus 'Varaha' could have meant the rhino in one of its original cannotations and 'Sveta Varaha Kalpa' the period when Aryans came into the Zone of its habitat. This may be pondered over by the Linguists and Sanskritists, and also the postulate that in conceiving a mighty animal form of Vishnu as the retriever of the earth from out of nether regions a rhino that is much more strong and can dig up with its horn, would have been more apt and preferable than a boar, and that the boar concept came in later as a substitute for the rhino concept. Some may argue, saying that a more or less similar concept obtains in the ancient myths, legends and traditions of the West, where spiritual powers of fertility, prosperity etc. are attributed to the Boar or Hog. Here too, perhaps, the Boar, reminiscent of the Rhino, was substituted in its place, and in fact the trans-Mediterranean region of the Nile valley and Sudan are even today homes of the rhino. The concept of its divinity could have been carried over, by the migrant folk of the early Mediterranean civilisations, and later, from hearsay knowledge of the form of the animal, the Boar, the nearest in resemblance of form, could have come to be so venerated.

Before closing our reflections on this aspect, we may note that the name of the region 'Swat valley' in the North west of India, is reminiscent of 'Sveta' a toponyn as suggested above. The valley was in the terrain of Harappans, who knew the rhino well, and it was also on the way of the incoming Aryans, since it is located in the Baluchistan area. Also we may recall in mind such other typonyms as Kandahar in the same region, and Kandhwa inside India. We have also noticed the name of the river Gandaki being the same as that of a female rhino. Is the toponym Quetta related to *Khetaka* which derives from *Kheta* the rhino hide?

If by any chance 'sveta' could have meant in the primitive dialect of the incoming Aryans 'the rhino' as it was seen or encountered by them for the first time when they crossed in to occupy the Saptasindhu and we could concede the meaning of 'Swat' as 'the territory where they met the animal, the prefix 'sveta' in *Sveta Varaha Kalpa* would perhaps, become intelligible, more so, if it was the local name in the local non-Aryan dialect, that was picked up into the Aryan

vocabulary. 'Brahui', considered to be a proto-Dravidian dialect, now forming a linguistic island in the same area of the North-west, too, would remind us of its closeness to the sound of the word 'Varaha', which can be the usual interchange of 'va' and 'bha' could be pronounced as 'Bharaha' or 'Baraha' when the pronounciation comes closer to Barahui, which in the Punjab and the North west would be pronounced as 'Barahui' as in the case of 'Dharma' being pronounced as 'Dharam'. We have the Tamil 'Vairavan' for 'Bhairava'. Possessing we are speculating much and preaching too much into the realms of scientific linguistics and comparative philology, fields of specialised studies in which we are not competent. But we feel that one may not be wrong in assuming that the incoming Aryans would only have picked up local or indigenous names of objects, animals, plants, places and the like, till then unfamiliar, or unknown to them, and adopted them as additions to their own vocabulary with suitable modifications in accordance with the genius of their own language. It is only very rarely that new names for new objects are invented and mostly they are compound words one constituent of which will be in the nature of recalling the name of an already familiar object, for example 'Chinibadam', in Hindi for groundnut (*Arachishypogea*) where 'chini' refers to its nature as an introduced or 'imported' plant, not indigeneous and 'badam', to its resemblance to a local nut. Like wise would be 'pea-nut' or 'monkey nut', the Ver-kadalai or 'Manila-payaru' its Tamil name for 'Arachis' which is a native of the Phillipines (Manila).

In contrast to the quantum of information revealed by the rich and effloresced literature of the Vedic Aryans, the paucity of material objects of the civilisation has been felt all along. This has been a challenge to the explorer and field archaeologist and generated the urge to explore and excavate in order to find and grapple with remains and material objects of civilisation or culture. In likely places and sites scholars and expert in the line have been at work. Starting with a string of places mentioned in the *Mahabharata*, such as Indraprastha (old Delhi) Hastinapura, Ahichhatra (Panchala), Kurukshetra etc., and, on the basis of the finds extending the work on to and study of the post-Harappan, and post-chalcolithic and pre-Buddhistic (or pre-Mauryan) horizons in the other digs including some *Ramayana* sites like Ayodhya, Sringebherapura etc., the archaeologist have arrived at certain significant conclusions. They have come upon a characteristic ceramic ware of invariable and uniform provenance in the said horizons in the sites of the Yamuna-Ganga region, which are too many to be enumerated here. The ceramic ware has been named 'the painted Grey Were' - P. G. W. or P. G. Ware for short that is ubiquitous and occurs in the strata, the horizons lying between the two limits specified. The time bracket of the extremes of provenance of this pottery as determined by stratigraphy and confirmed by the C-14 dating method has now come to be fixed as between 1,000 B. C. or one or two centuries earlier, and 500 B. C. or a little after. The earliest ascertained C-14 date is 100 - 110 B. C. from the Atranji-Khera site in U. P.; and below this layer containing the object that yielded the above date there was a further cultural deposit of 1.40 meters indicating the possibility of a still earlier dating for the ware.

Simultaneously the self-same site has indicated the advent of iron and on

the basis of this Atranji-Khera evidence, the earliest iron so far known in North India would appear to date round 1,000 B. C.

At Rupar and Alamgirpur in the same region, the P. G. W. has been found to post-date the Harappan culture, while at Hastinapura, it, likewise post-dated what is called the 'Ochre Colour Ware' of a culture co-eval with the Harappan and ante dated the Northern Black polished ware - N. B. P. Ware of the second half of the first milleunium B. C.

The available evidence would show that the P. G. W. people lived in much less sophisticated houses of wattle-and-daub, carried on agriculture and domesticated animals, amongst which particular mention may be made of the Horse. To begin with they seem to have used only copper, but not very late in the day did they start using iron as in Atranji-Khera.

Bhagavanpur on the river Sarasvati in the Kurukshetra District (Haryana) which is about 150 K.M north of Kalibhangan (Harappan city) and some 400 KM east of Harappa, has yielded most interesting results on excavation. At this site the P. G. W. culture at its lowest level is found to be interlocked with the last phase of the decadent Harappan. On this showing it was the late Harappans who first established their settlement here over the alluvial deposit of the river Sarasvati on mud platforms raised to ward off inundation by flood. Yet the site was damaged twice by floods, the second one occuring when the people using P. G. W. came to live alongside with the Harappans. Iron was not found in association with either of these cultures.

Circumstantial evidence, along with other considerations would thus identify the P. G. W. people with the Aryans who came over to this region, perhaps in waves, and that iron came subsequently into the P. G. W. culture, even as it seems to have done in respect of the megalithic culture of South India, at almost the same time. Possibly the wave that straggled into the Bhagawanpura Harappan settlement was a later one. still conversant with copper only, that came to live with the late Harappans already in existence there. Their sojourn here was perhaps on their still eastward movement to join the earlier stock that had come into possession of the knowledge of iron, its metallurgy and fabrication and more than all its superior utility. Is this archaeological evidence echoed by the belief of some scholars that 'ayas' or 'loha' of earlier (*Rig Vedic*) literature denoted copper?. We cannot say for certain, in anticipation of further evidence and study by the Vedic scholars, linguists, and archaeologists. Suffice it to say that the chronological hiatus between the last of the Harappans and the first of the Aryans that came into the scene has been considerably narrowed, if not closed altogether by this very significant archaeological find.

Finally and as proposed earlier we revert to the Harappan seals which provided us the main food for thought and occasioned a chain of thoughts that have engaged our minds so far. As we saw earlier we are yet to find a satisfactory method of decipherment and a convincing solution to the problem. Is the language

in the short 'legends' Sanskritic or Dravidic in nature or affinity; or neither of the two but something else? Is each 'legend' an agglutination of the consonantal sounds of the signs employed and a syncopation of consonants with no vowel leaving the reader to guess as was the characteristic of all the contemporary languages of West Asia? We do not know. One similarity with them is in respect of the channel of writing, and hence of reading too, being from right to left. In this context we are reminded about Kharoshti, an unique script found employed from about the 4th Century B. C., that was confined, too, mostly, to the extreme north west of the Indian sub-continent and that survived for about eight centuries and had spread to Chinese Turkestan and beyond on the west. It is believed to have derived from the alphabet of Arabic which goes along with the Persian, in the matter of the direction of writing the letters of a word being from the right end to the left. This makes us think about the possibility of Karoshti maintaining the ancient Harappan tradition in that area that was, perhaps, kept alive through the centuries, or it is only a case of copying the mode prevailing in the adjacent West. Though the morphology of Kharoshti or (Kharotti) letters differs in many respects from that of Brahmi, the contemporary and slightly earlier script of India that became universal in the sub-continent, Buhlers' theory that Kharoshti was derived from the North Semetic, is generally accepted.

Brahmi script, that is of earlier origin in India, and spread all over India, from which all the later Indian scripts derived, is written in the opposite direction from left to right, the channel of writing of all later Indian scripts. Occasionally it is found written in the opposite direction-right to left, as if a mirror reflection of the words were intended to be read. There are also a few cases of Boustero-phedon writing that is writing from right to left and left to right in alternate lines. This Greek term likens it to the ox turning alternately in ploughing a field and resembles the *Gomutrika* pattern of a zig-zag line made on the ground by a cow urinating while walking.

As regards the problem of decipherment of the script found in the Harappan seals and pottery we have not been fortunate enough to come across bi-lingual or tri-lingual inscriptions employing simultaneously more than one script for the same word, of which one of the scripts is known, as in the case of the Rosita stone record and the Behistan rock face inscriptions in Egypt and West Asia respectively, or again like what we had in the Indo-Greek coins, with the legend in Greek and Indian scripts. This fortunate circumstance afforded the chance to find a key for decipherment of the letters of till unknown scripts. Nor have we in our case long records on tombs or papyri as in Egypt, or rock faces or clay tablets as in West Asia, which only would supply a larger vocabulary and indicate the form, structure and syntax etc. of the language involved.

Since there are obvious differences between the Harappan writing on the one hand and the contemporary West Asian scripts on the other, the Harappan writing presenting a mixture of pictographs and ideographs, if we can for convenience use the two terms in this case, the Harappan writing stands out as unique, and very much indicative of local or indigenous origin.

Working on this basis scholars like Father Heras, primarily assuming that the language involved could be Dravidic, have tried to interpret the writing on the seals by applying sound values derived from the names of the animals recognised as such by their natural depiction and the other signs that simulate animal figures symbolically. They were not then aware of the channel of writing being from the right to the left or sinistral. They chose Tamil as it is the oldest surviving language in the Dravidic group of languages, but we may also remember that the oldest extant literature and inscriptions in that language and in what has now come to be called Tamil-Brahmi (or Dravidi) script do not take us earlier than the 3rd century B. C. This leaves a gap of about two milleunia, if not a little more, between it and the Harappan apogee. The two are apart both in the matter of space and time 2,000 mile and two milleunia. Our investigations and field explorations and excavations in the intervening regions have not so far indicated the missing links, if any, between the two ends that are apart chronologically or spatially.

Similar attempts have been made assuming the language involved to be Sanskritic. Dr. S. R. Rao the excavator of Lothal in Gujarat, has tried to bridge the gap between the late-Harappan degenerate signs, by which time he assumes that the pictographs' had disappeared leaving the other signs, in modified forms, with the letters of Early Brahmi and tried to read Sanskritic names. Other scholars have made comparative studies between the late-Harappan signs and the graffiti marks (assumed by some to be more 'potter's mark') on potsherds as for example in the megalithic pottery or even the few signs or symbols found occasionally in the proto-historic cave-paintings.

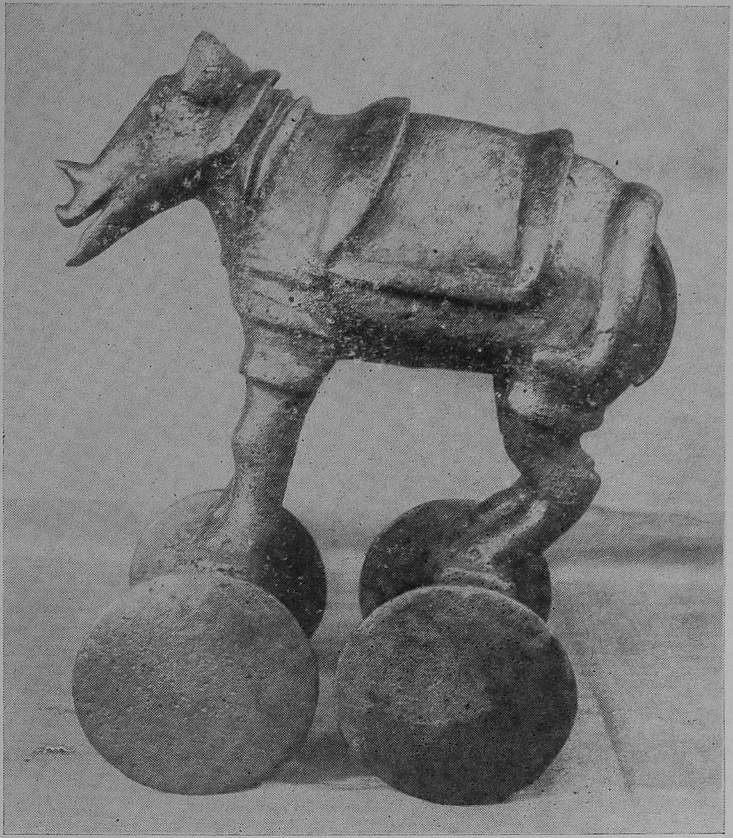
The above lines of thought would perhaps, lead us to think, that firstly it is imperative and useful to ascertain the ancient names of the animals portrayed as an aid in suggesting to some extant a possible interpretation of the seals, that bear the animal form interpolated in the same line of other indeterminate signs or symbols looking like 'script', or have the script-like writing separately from the depicted forms of the animal or animals in a series on the same face of the seal. We may perhaps, also look into the prevailing local or folk language and dialects of the area in which the names could have been preserved by tradition even if slightly modified by use in course of times. The ancient Prakritic names, too, may perhaps need looking into, in order to suggest possible original names that might have been current in Harappan times. We may at the same time remember that we cannot expect to derive help from west Asian languages, since they were not familiar with the four animals we have taken up for thinking at the commencement of our talks, as they not being indigenous or native to that area and environment.

The other alternative that we may venture to think of will, perhaps, be to assume that the Aryans who came close upon the heels of the Harappans and succeeded them in occupying the area, and beyond on the east, which was also the natural habitat of the four animals, should have, necessarily, picked up their names from the local people, whom

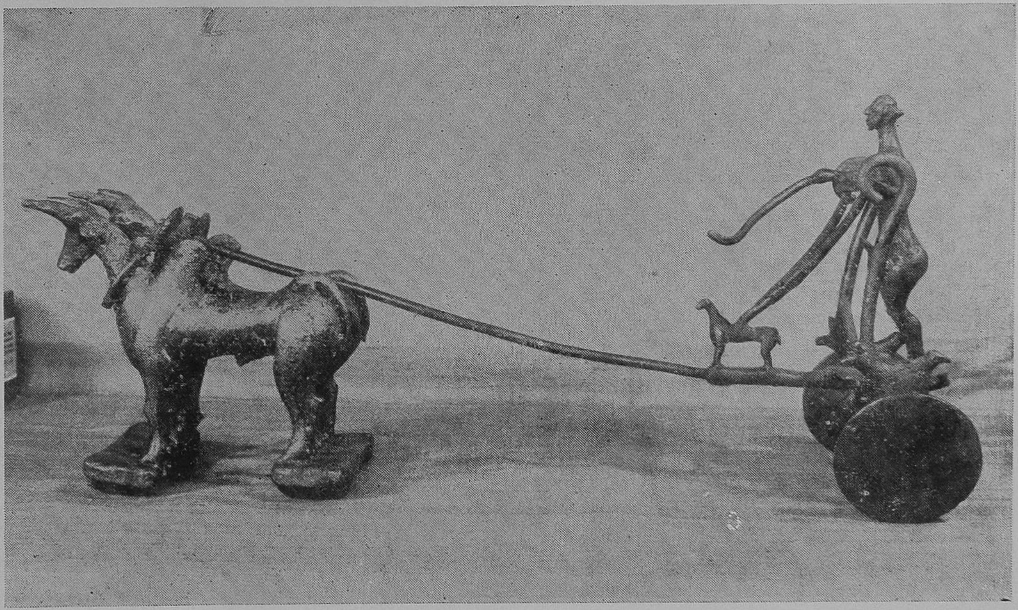
they ultimately displaced or assimilated into their fold. They too, if they had come from outside the area, cannot be expected to have had the names of these animals in their own vocabulary and language. They could only have taken the locally prevailing names into vocabulary. This perhaps, would need investigation into the ancient Prakrits of that region. We shall leave this problem or question to the experts in Sanskrit and the Prakrit and cultural Anthropology, since it is they alone that can determine the oldest name of the Elephant, the Rhino, the Tiger and the Bull etc. from those sources and determine their derivation from original 'roots' or as borrowed. This linguistic *cum* ethnic study may, perhaps help the Epigraphist and Palaeographist in ascertaining the sound values of the pictographs and other ideographs of human-like or animal like signs.

Leaving the solution of the moot problem to them in the light of the above, we close the chain of our thoughts which has made a circle, as it were, since the last link has come to meet the first and merge into it, the intermediate links being our varied thoughts in the chain. It is the nature of one thought to lead to another in succession. But we are satisfied in the final thought that we have been able to traverse a wide ground and get together many facts and factors in the course of our reflections. We have attempted to make what may be called a multilateral correlation of facts and ideas, heterogeneous, one may consider, from different disciplines or branches of learning, historical and scientific. We have thought aloud and what we expressed in the process of thinking, may, let us believe afford food for thought to others who take up these moot problems for their own musing and solution.

ELEPHANT
Standing on platform
(Daimabad Ahmadnagar, Maharashtra)



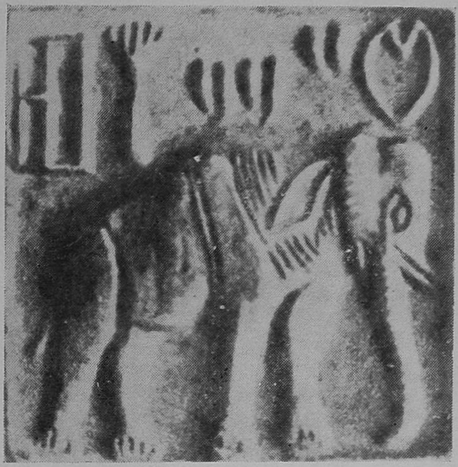
RHINOCEROS
Mounted on wheeled platform
(Daimabad Ahmadnagar, Maharashtra)



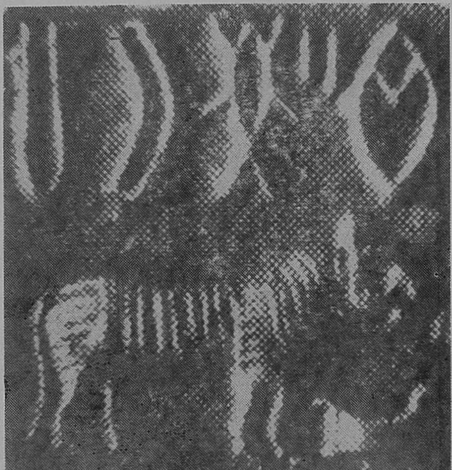
PAIR OF BULLS YOKED TO A CHARIOT
(Daimabad Ahmadnagar, Maharashtra)

BUFFALO
Mounted on wheeled platform
(Daimabad Ahmadnagar, Maharashtra)

TYPICAL HARAPPAN RHINOCEROS
(Natural form)



TYPICAL HARAPPAN ELEPHANT
(Natural form)



TYPICAL HARAPPAN TIGER
(Natural form)

TYPICAL HARAPPAN BULL
(Natural form)
With long horns, humps and dewlap in folds